SERIAL NO. 3326

ONKYO SERVICE MANUAL

STEREO CASSETTE TAPE DECK MODEL TA-2200

Black model

UD,UD Ⓝ	120V AC, 60Hz
UG	220V AC, 50Hz
UW	120 or 220V AC, 50/60Hz
UQA, UQB	240V AC, 50Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

SPECIFICATIONS

Track Format:	4-tracks, 2-channels
Erasing System:	AC erase
Tape Speed:	4.8 cm/sec. (1-7/8 i.p.s.)
Wow and Flutter:	0.07% (WRMS)
Frequency Response:	20–17,000Hz (Normal) (30–16,000Hz ±3dB) 20–18,000Hz (High) (30–17,000Hz ±3dB) 20–19,000Hz (Metal) (30–18,000Hz ±3dB)
S/N Ratio:	58dB (metal tape, Dolby NR off) A noise reduction of 10dB above 5kHz and 5dB at 1kHz is possible with Dolby B NR. A noisy reduction of 20dB at 5kHz is possible with Dolby C NR.
Input Jacks:	Line IN: 2 Input sensitivity: 60mV Input impedance: 50kohms
Outputs:	Line OUT: 2 Standard output level: 500mV (0dB) Optimum load impedance: over 50 kohms Headphone jack: 1 Optimum load impedance: 8 to 200 ohms
Motors:	DC servo motor: 1 DC motor: 1
Heads:	REC/PB: Special Hard Permalloy x 1; Erase head: Ferrite x 1
Power Supply Rating:	U.K. and Australian models: AC 240V, 50Hz U.S.A. and Canadian models: AC 120V, 60Hz Worldwide models: AC 120V and 220V switchable, 50/60Hz
Power Consumption:	19 watts
Dimensions:	435(W) x 122(H) x 262(D) mm (17-1/8" x 4-13/16" x 10-15/16")
Weight:	4.4 kg. (9.7 lbs.)

RC-146T Remote Control Transmitter
(U.S.A. and Canadian models only)

Transmitter:	Infrared
Signal Range:	Approx. 5 meters (16 feet)
Power Supply:	Two AAA batteries
Dimensions:	38(W) x 150(H) x 15.3(D) mm (1-1/2" x 5-7/8" x 5/8")
Weight:	62 grams (2.2 oz.) (including batteries)

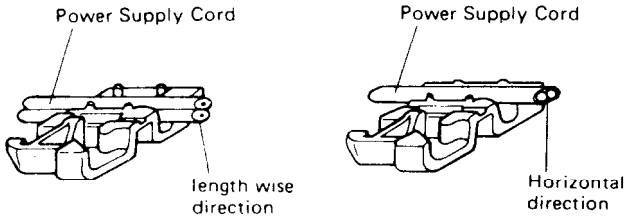
Specifications and external appearance are subject to change without notice because of product improvements.

ONKYO®
AUDIO COMPONENTS

SERVICE PROCEDURES

1. Replacement of power supply cord

There are two power supply cord outlets on the strainrelief. Insert them in prescribed direction to ensure safety. AS-UC-3 (UD<120V> model) should be inserted lengthwise and other types of cords should be inserted horizontally.



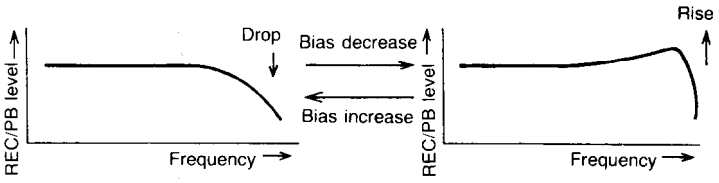
2. Insulating resistance measurement

Connect the insulating-resistance tester between the plug of power supply cord and chassis.
Specifications; 500V more than 10MΩ

HX PRO CIRCUIT OPERATION EXPLANATION

1. Regarding recording frequency characteristic and bias

Ordinarily, if the recording bias current is increased, REC/PB frequency response level in the high frequency region (about 10KHz and above) drops, and if the bias is decreased, the response rises.



2. Regarding the basic operation of HX PRO (Refer to Fig. 1)

The HX PRO uses the μ PC1297CA IC. The operation is in accordance with the following.

1) At (a), the recording bias is added onto the audio signal, and the recording signal is detected. This is the same as the recording head recording the signal on the tape.
2) The signal of 1) preserves the frequency response with the integrated circuit of (b).

$$\text{Frequency} = \frac{R433 + R431}{2\pi \times C423 \times R433 \times R431} \quad (2.1)$$

By means of the frequency of Fig. 1, the frequency which is effective from the beginning is determined. In the ordinary situation, this is half the audio band (10KHz), (10KHz ~ 7.5KHz).

3) At (c), in order to use the affected waveform after-ward, absolute detection is carried out.
4) At (d), the waveform peak value is detected. The output becomes the peak DC voltage.
5) At (e), the standard voltage and the voltage of (4) are compared.
6) With the output of (e), the frequency generation level is controlled (voltage controlled amplifier). That is, the bias size is varied.
7) Summing up 1) ~ 6):
   At (a), the time constant (frequency) that is detected in the recording signal is preserved, and above a certain frequency and above a certain level, the VCA controls the bias current by causeing its reduction. When this is done, in the maner shown in the explanation of Item I above, the frequency high region is raised. With this control, the audio signal is instantaneously dealt with.

3. Regarding the operating conditions of the HX PRO

1) With equation (2. 1) noted above, the effect begins at the frequency thus determined.
2) Above a certain level the effect begins.
   (Substantially 0 dB: In the vicinity of 500mV line out)
   The audio signal component level is dependent upon the waveform after point (c).

HX PRO BLOCK DIAGRAM

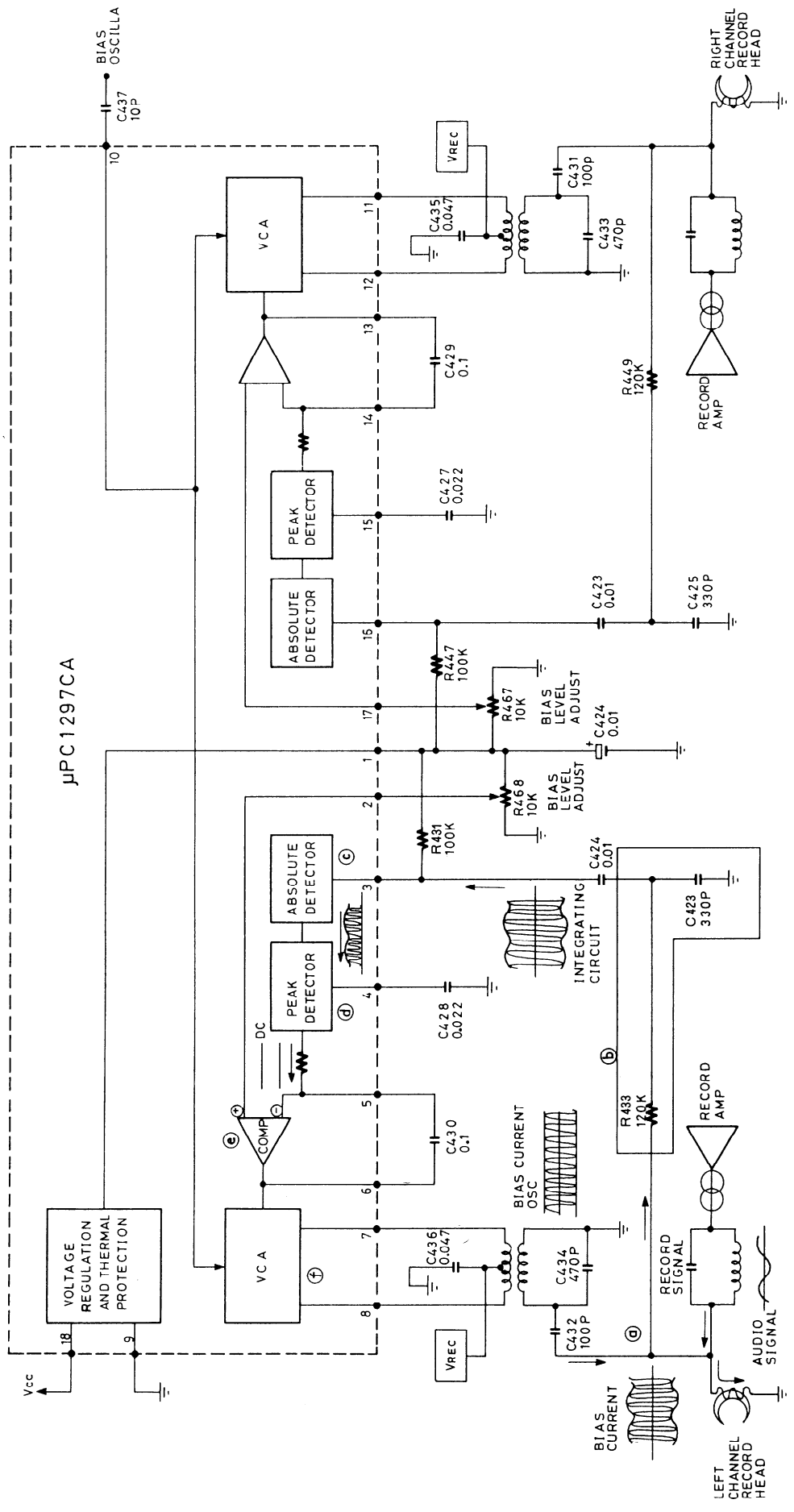
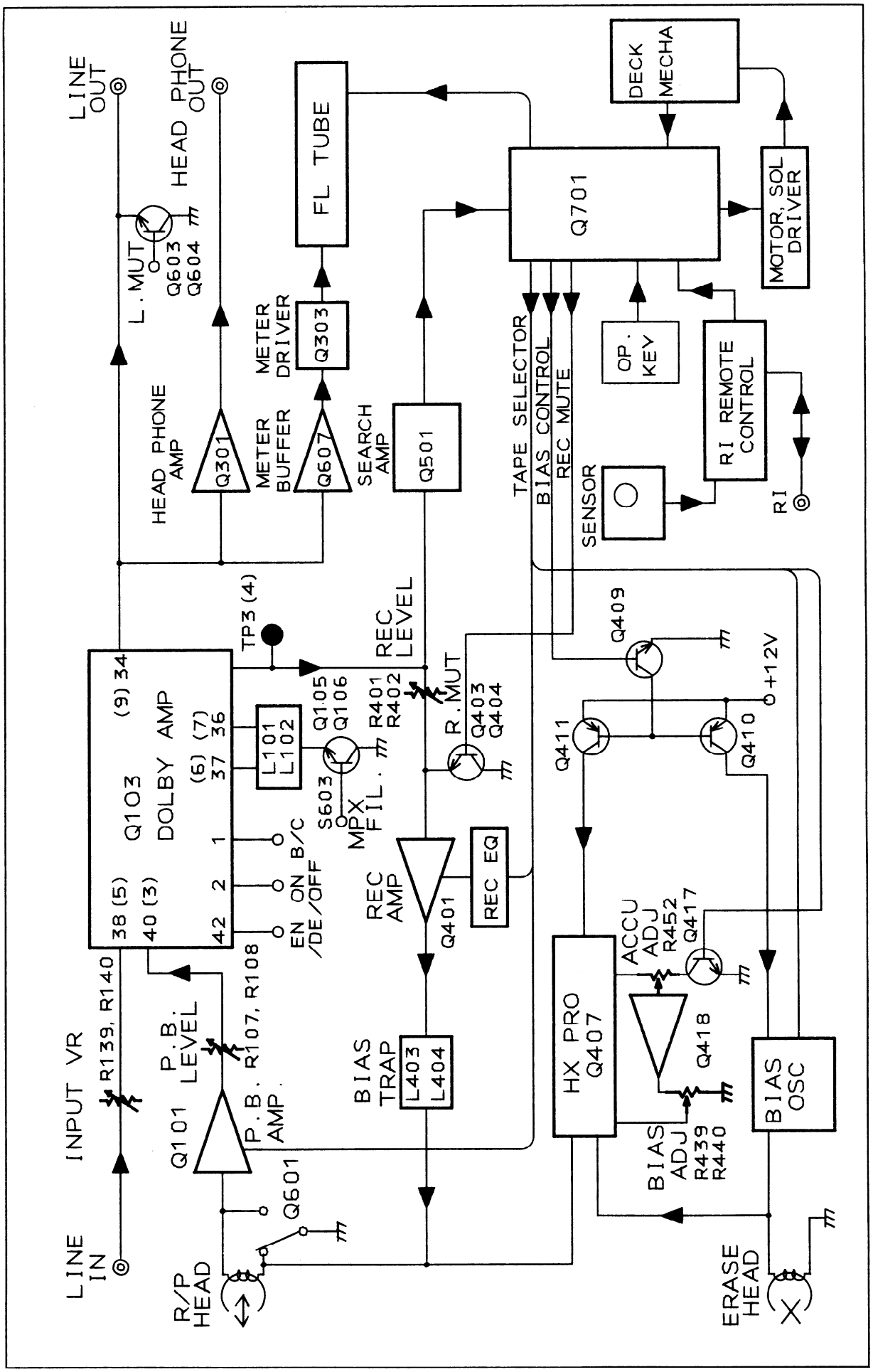


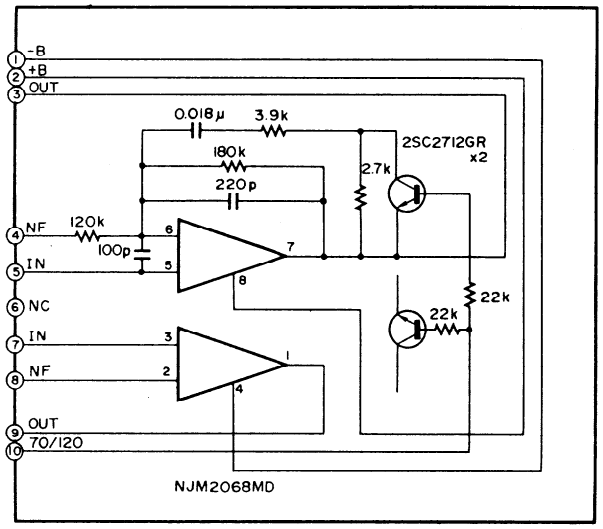
Fig. 1

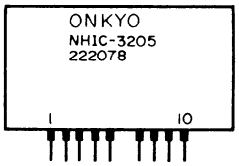
BLOCK DIAGRAM



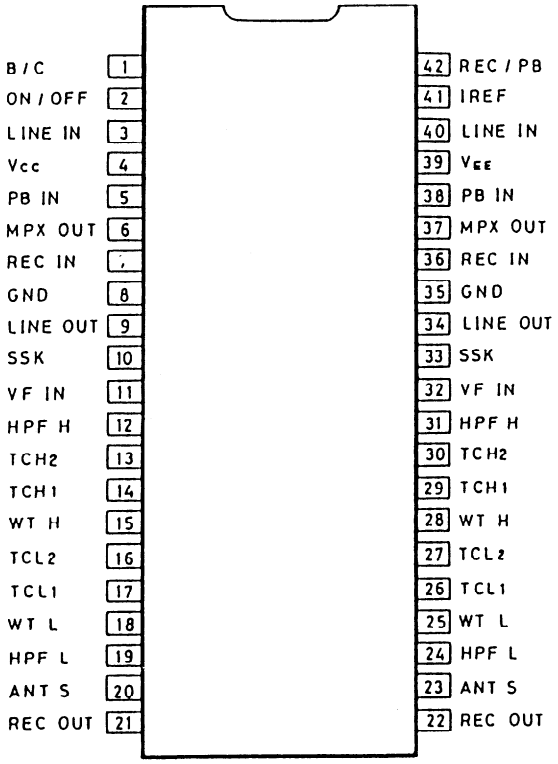
IC BLOCK DIAGRAM

NCHC-3205 (P.B AMP)

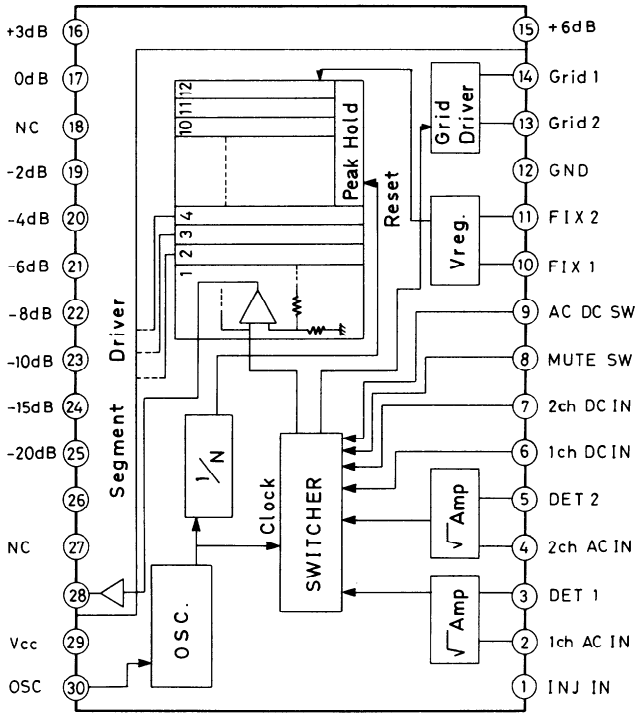




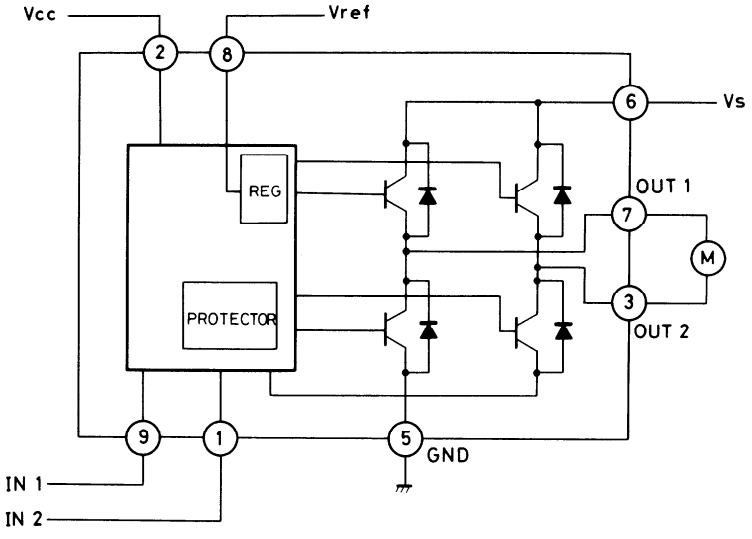
CX20187 (DOLBY N.R)



BA6810S (METER DRIVE)

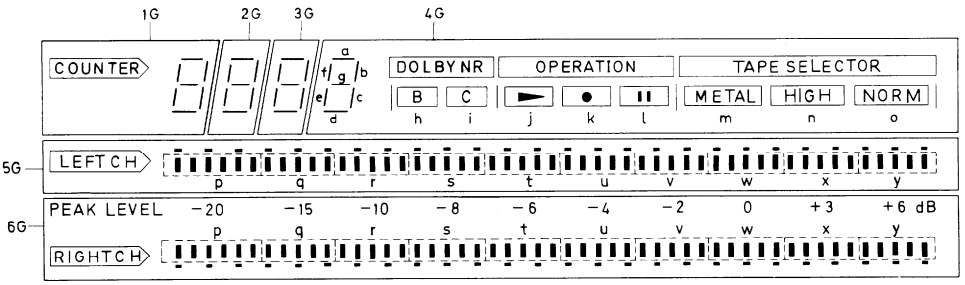


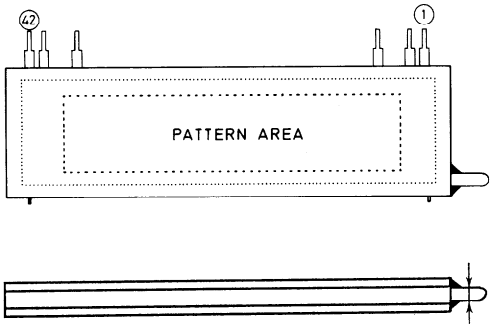
TA-7291S (MOTOR DRIVE)



INPUT		OUTPUT		MODE
IN 1	IN 2	OUT 1	OUT 2	
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

BG-654G (DISPLAY TUBE)

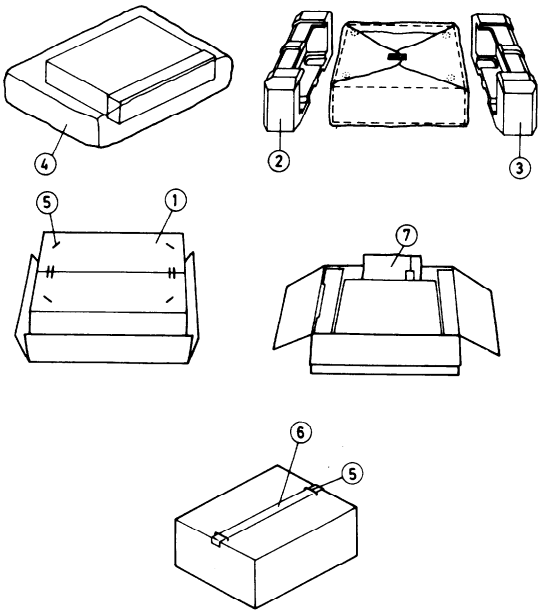




PIN CONNECTION

42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
F 2	F 2	N P	N P	1 G	2 G	3 G	4 G	5 G	6 G	N P	N P	a	b	c	d	e	f	g	h	i	j	k	ℓ	m	n	o	p	q	r	s	t	u	v	w	x	y	N P	z	N P	F 1	F 1

PACKING VIEW



PACKING PART LIST

REF NO.	PART NO.	DESCRIPTION
1	29051896	Master carton box
2	29091235A	Pad(L)
3	29091236A	Pad(R)
4	29100037A	650 X 500 Poly bag
5	282301	Sealing hook
6	260012	Damplon tape
7	Accessary bag ass'y	
	29341401	Instruction manual
	2010098A	Connection cable
	29365019	Waranty card(N)
	29358002G	Service station list(N)
	24140146	Remocon, RC-146T
	3010124	Batterie, UM-4
	29100006A	350 X 250 Poly bag

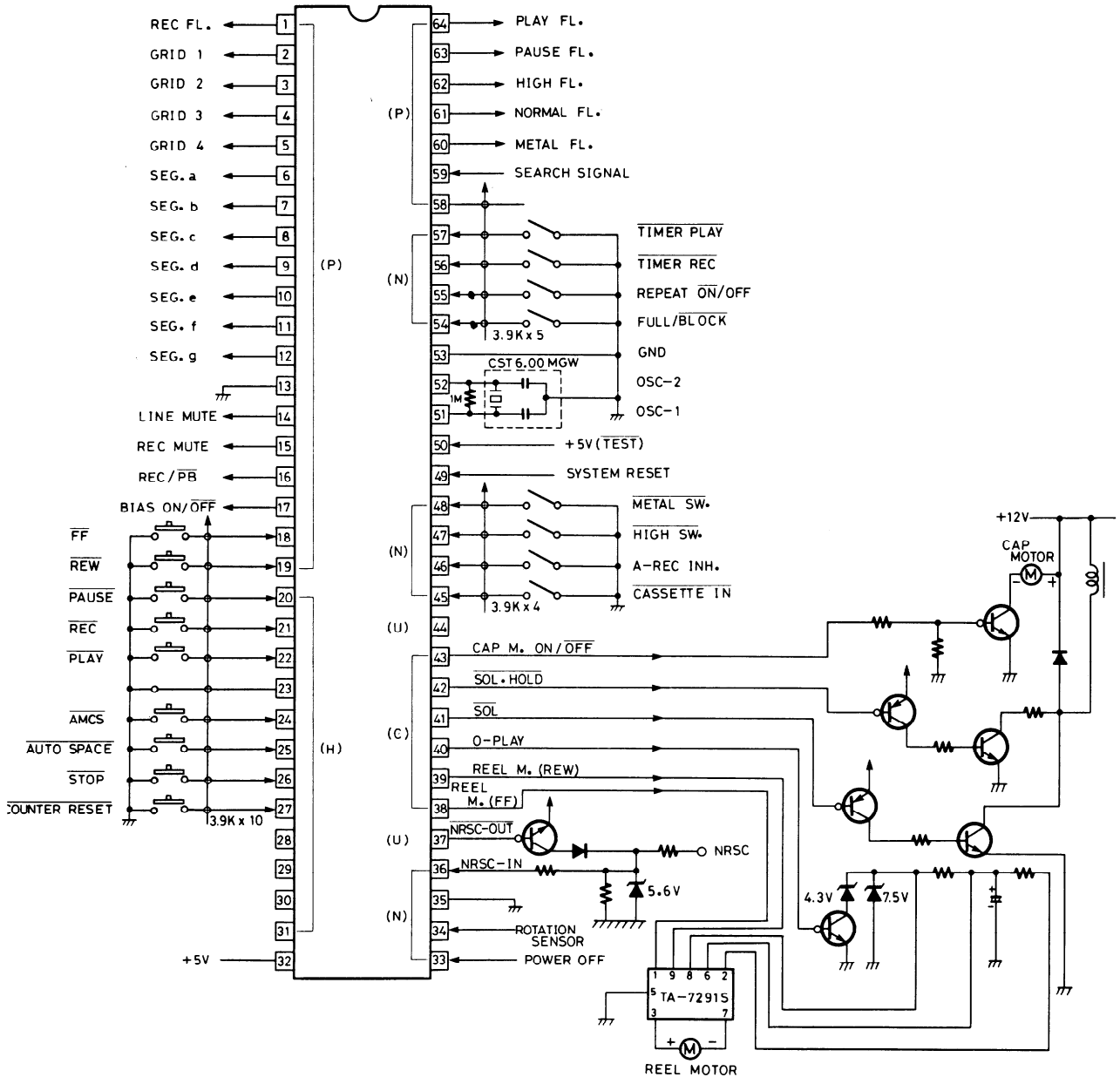
G/W Model

REF NO.	PART NO.	DESCRIPTION
1	29051896	Master carton box
2	29091235A	Pad(L)
3	29091236A	Pad(R)
4	29100037A	650 X 500 Poly bag
5	282301	Sealing hook
6	260012	Damplon tape
7	Accessary bag ass'y	
	29341403	Instruction manual
	29341401	Instruction manual (QA/QB)
	2010098A	Connection cable
	29100006A	350 X 250 Poly bag
	29365022	Waranty card (QB)

NOTE

(N): Only U.S.A. Model
(QA): Only Australian model
(QB): Only U.K. model

MICRO COMPUTER (HD-614048SJ49)



MICRO COMPUTER

Terminal Name and Function

Pin No.	Name	Function
1	REC FL	Lights up the FL tube REC display. HIGH = Light up.
2 ~ 5	GRID 1 ~ 4	Lights up the FL tube grid 1 ~ 4. HIGH = Light up.
6 ~ 12	SEG. a ~ g	Lights up the FL tube segments a ~ g. HIGH = Light up.
14	LINE MUTE	Line muting output: HIGH = Muting ON/LOW = Muting OFF.
15	REC MUTE	Record muting output: HIGH = Muting ON/LOW = Muting OFF.
16	REC/$\overline{\text{PB}}$	Record/playback selector output: HIGH = Record/LOW = Playback.
17	BIAS ON/$\overline{\text{OFF}}$	Recording bias oscillator control output: HIGH = Bias ON/LOW = Bias OFF.
18	$\overline{\text{FF}}$	FF key input
19	$\overline{\text{REW}}$	REW key input
20	$\overline{\text{PAUSE}}$	PAUSE key input: input accepted in STOP, Recording, Playback and Autospace modes.
21	$\overline{\text{REC}}$	REC key input: effected by simultaneously pressing both PAUSE KEY and PLAY KEY.
22	$\overline{\text{PLAY}}$	PLAY key input
24	$\overline{\text{AMCS}}$	AMCS key input (music selection)
25	$\overline{\text{AUTO SPACE}}$	AUTOSPACE key input: input accepted from REC and REC/PAUSE modes.
26	$\overline{\text{STOP}}$	STOP key input
27	$\overline{\text{COUNTER RESET}}$	COUNTER RESET key input: sets electronic counter to '0000'.
32	Vcc	PC power supply.
33	POWER OFF	POWER OFF signal input: HIGH = POWER OFF
34	ROTATION SENSOR	Pulse input for tape counter, tape end sensor and BLOCK REPEAT time.
38	REEL M. (FF)	Reel motor output (FF direction). Set to HIGH to rotate in FF direction.
39	REEL M. (REW)	Reel motor output (REW direction). Set to HIGH to rotate in REW direction.
40	0-PLAY	Reel motor rotation speed selection output. HIGH = PLAY/LOW = FF/REW.
41	$\overline{\text{SOL}}$	Triggers the solenoid. LOW = Trigger.
42	$\overline{\text{SOL. HOLD}}$	Holds solenoid. LOW = Hold.
43	CAP M. ON/$\overline{\text{OFF}}$	Capstan motor ON/OFF output. HIGH = ON/LOW = OFF.
46, 58	REC INH. (A)	Record inhibit tab (A side) detection input. HIGH = Record inhibit tab broken.
47	$\overline{\text{HIGH SW.}}$	High position tape detection input. LOW = High position tape.
48	$\overline{\text{METAL SW.}}$	Metal tape detection input. LOW = Metal tape.
49	RESET	PC system reset.
50	$\overline{\text{TEST}}$	Link to + Vcc
51, 52	OSC1, OSC2	Internal oscillator input terminal.
53	GND	Grounding
54	FULL/$\overline{\text{BLOCK}}$	FULL REPEAT or BLOCK REPEAT selection input. HIGH = FULL REPEAT/LOW = BLOCK REPEAT.
55	REPEAT $\overline{\text{ON}}$/OFF	REPEAT ON/OFF selection input. HIGH = OFF/LOW = ON.
56	$\overline{\text{TIMER REC}}$	TIMER REC switch. HIGH = OFF/LOW = ON.
57	$\overline{\text{TIMER PLAY}}$	TIMER PLAY switch. HIGH = OFF/LOW = ON.
59	SEARCH SIGNAL	Signal input for AMCS (music selection). HIGH = Signal detected.
60	METAL FL.	Tape selector output. HIGH output = Metal tape.

Pin No.	Name	Function
61	NORMAL FL.	Tape selector output. HIGH output = No tape or normal tape.
62	HIGH FL.	Tape selector output. HIGH output = High position tape.
63	PAUSE FL.	Lights up FL tube PAUSE display. HIGH = Light up.
64	PLAY FL.	Lights up FL tube PLAY display. HIGH = Light up.

REPEAT (FULL or BLOCK) and AMCS.

The FULL REPEAT function enables five plays of one full side of the tape currently on the machine. It operates such that when FULL REPEAT has been selected and the end of the tape is sensed during PLAY or rewind then the machine will automatically enter this mode. Where the end of the tape is sensed and this mode entered during play, then the latest completed play will be deemed to be the first play and the tape will then be played four more times. The use of the PAUSE or its release during the course of a FULL REPEAT will not have any effect on the subsequent number of repeats. (see Fig. 2)

The BLOCK REPEAT function enables five consecutive plays of the section between any two selected points. The starting point is the point at which the BLOCK REPEAT function is switched ON, or alternatively, if the BLOCK REPEAT function is already switched ON, it is the point during play at which the PLAY button is depressed. If the PLAY button is depressed more than once then the effective starting point will be the last point at which the button was depressed and in the case of a reverse deck, if the end of the tape is sensed before the return point has been set then the mechanism is reversed and that point becomes the new play starting point.
The return point is the point during F-PLAY at which the REW button is depressed or the point during R-PLAY at which the FF button is depressed. However, in the case of a one-way deck, if the end of the tape is sensed before the return point has been set then the end of the tape itself will become that return point. The use of the PAUSE or its release during the course of a BLOCK REPEAT will not affect the continuation of the operation but if any other function is activated during the course of a BLOCK REPEAT then this will cause the BLOCK REPEAT function itself to be terminated at that point and then new operation to begin. When the return point is sensed for the fifth time then the BLOCK REPEAT operation is terminated and the machine stops. (see Fig. 3)

* Where the full BLOCK REPEAT section is set to cover too short a period the return point should be moved out until sufficient length has been allowed.

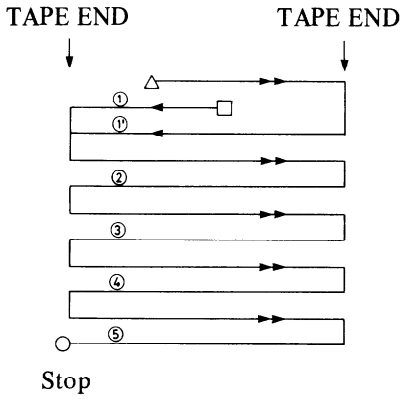


Fig. 2 Representation of FULL REPEAT operation

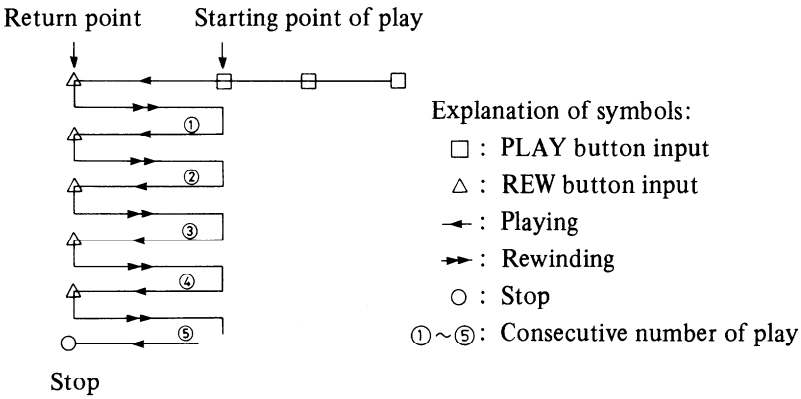


Fig. 3 Representation of BLOCK REPEAT operation (The play start point and return point are detected by counting the revolution pulses of the reel capstan)

AMCS is a music selection function which operates by putting the mechanism into the CUE condition and then monitoring the signals entering the SEARCH SIGNAL terminal in order to detect the start of the music and then play it for a period of about ten seconds. (Whilst in this play condition the PLAY display flashes at about 1Hz). When the ten seconds is up the machine moves to the next music selection operation.

* The gap between pieces of music is detected by converting to normal play time and taking a nominal 5 seconds or actual 2.5 seconds or more as the nonrecorded gap.

ADJUSTMENT PROCEDURES

PRECAUTIONS

1. Before adjustment, clean the following parts with an alchol moinstend swab.
   * record/playback head
   * erase head
   * pinch roller
   * capstan
2. Do not use magnetized screwdriver for adjustments.
3. Demagnetize record/playback head with a head demagnetizer.

TEST EQUIPMENT/TOOLS REQUIRED:

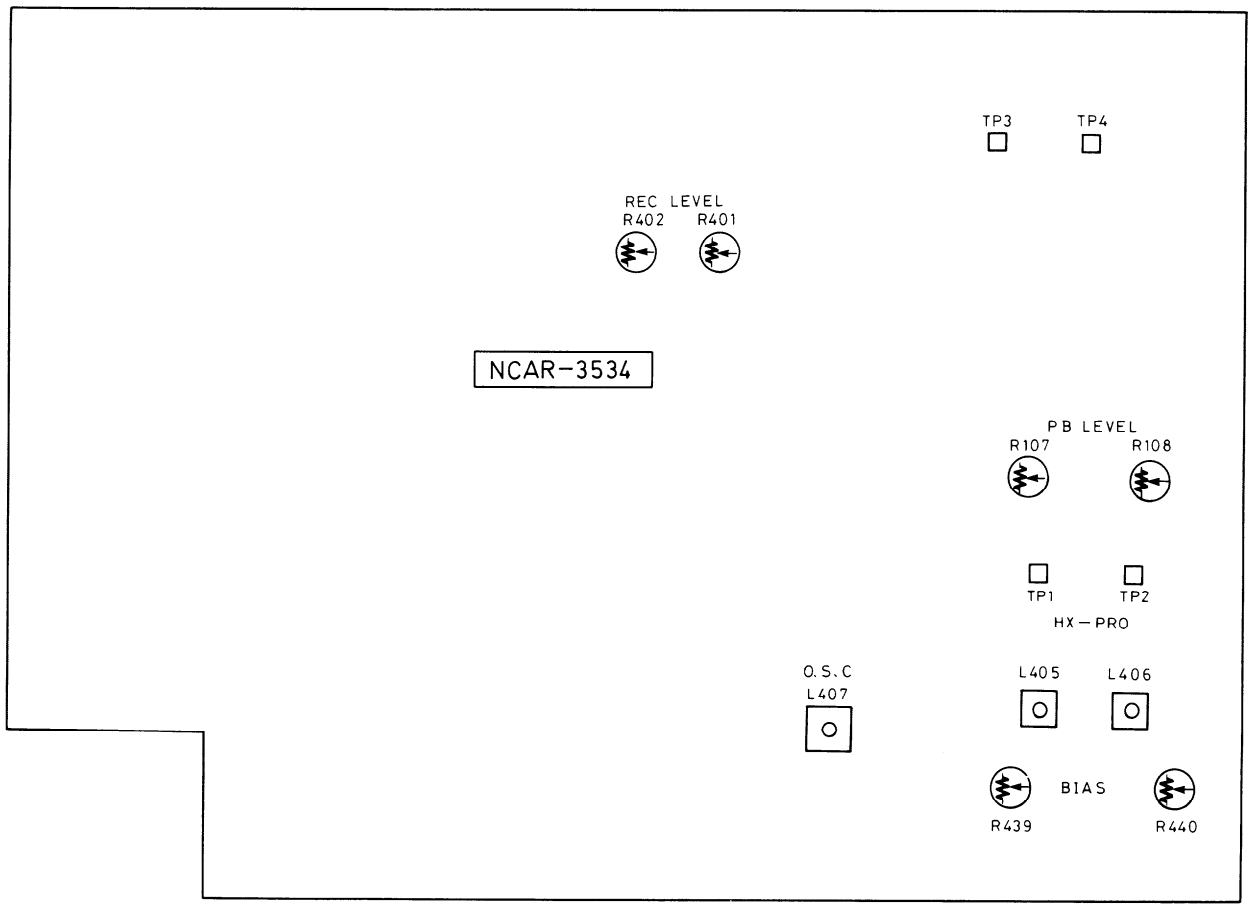
Audio oscillator
Digital frequency counter
Oscilloscope
Attenuator
AC voltmeter
Non-magnetic screw driver
Test tapes
VTT-658 : 10 KHz, −15dB
MTT-111 : 3 kHz, −10dB
MTT-150 : Dolby level calibration 400Hz, tone 200nWb/m

Item		Connection of instrument	Line input	Test tape	Mode	Output indicator	Adjustment point	Adjust	Remarks
1	Tape speed	Frequency counter to LINE output terminal		MTT-111	PB	Frequency counter	Semi-fixed on the moter	3000±20Hz	
2	Head azimuth	AC voltmeter and oscillo-scope to LINE output terminal		VTT-658	PB	AC voltmeter	Head azimurth screw	Maximum and same phase at channels L and R	Fig.-1
3	Playback level	AC voltmeter to terminals TP-3 and TP-4		MTT-150	PB	AC voltmeter	R107(Ch.L) R108(Ch.R)	245mV	
4	OSC Block	Frequency counter to P401 read loose coupling		METAL TAPE MX-C60	REC	Frequency counter	L-407	85kHz±2kHz	
5	HX-PRO	AC voltmeter to terminals TP-1 and TP-2		METAL TAPE	REC	AC voltmeter	L-405(Ch.L) L-406(Ch.R)	Maximum	R-439 R-440 Max clock wise
6	Bias current	Fig.-2	1KHz, −20dB and 12kHz, −20dB	XL-II C-90	REC/PB	AC voltmeter	R439(Ch.L) R440(Ch.R)	Same level at REC/PB	Input VR maximum.
7	Record level	Fig-2	1kHz	XL-II C-90	REC	AC voltmeter	Attenutor or AF OSC output	350mV	
					REC/PB	AC voltmeter	R401(Ch.L) R402(Ch.R)	Same level at REC/PB	

Blank tape

NORMAL UD-1 C-90
HIGH ..... XL-II C-90
METAL..... MX C-90

PLAY torque ..... 30 ~ 70 g/cm
FF.REW torque ..... 80 ~ 180 g/cm
Back tension..... 2 ~ 7 g/cm


TP3
TP4
REC LEVEL
R402
R401
NCAR-3534
PB LEVEL
R107
R108
TP1
TP2
HX-PRO
O.S.C
L407
L405
L406
BIAS
R439
R440

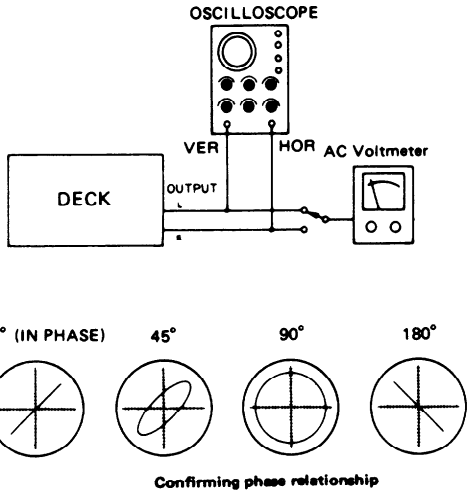

OSCILLOSCOPE
VER
HOR
AC Voltmeter
DECK
OUTPUT
0° (IN PHASE)
45°
90°
180°
Confirming phase relationship

fig-1

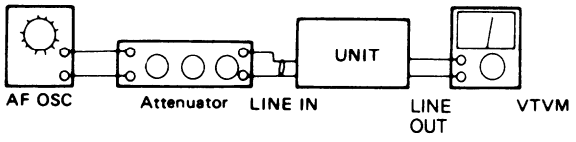

AF OSC
Attenuator
LINE IN
UNIT
LINE OUT
VTVM

fig-2

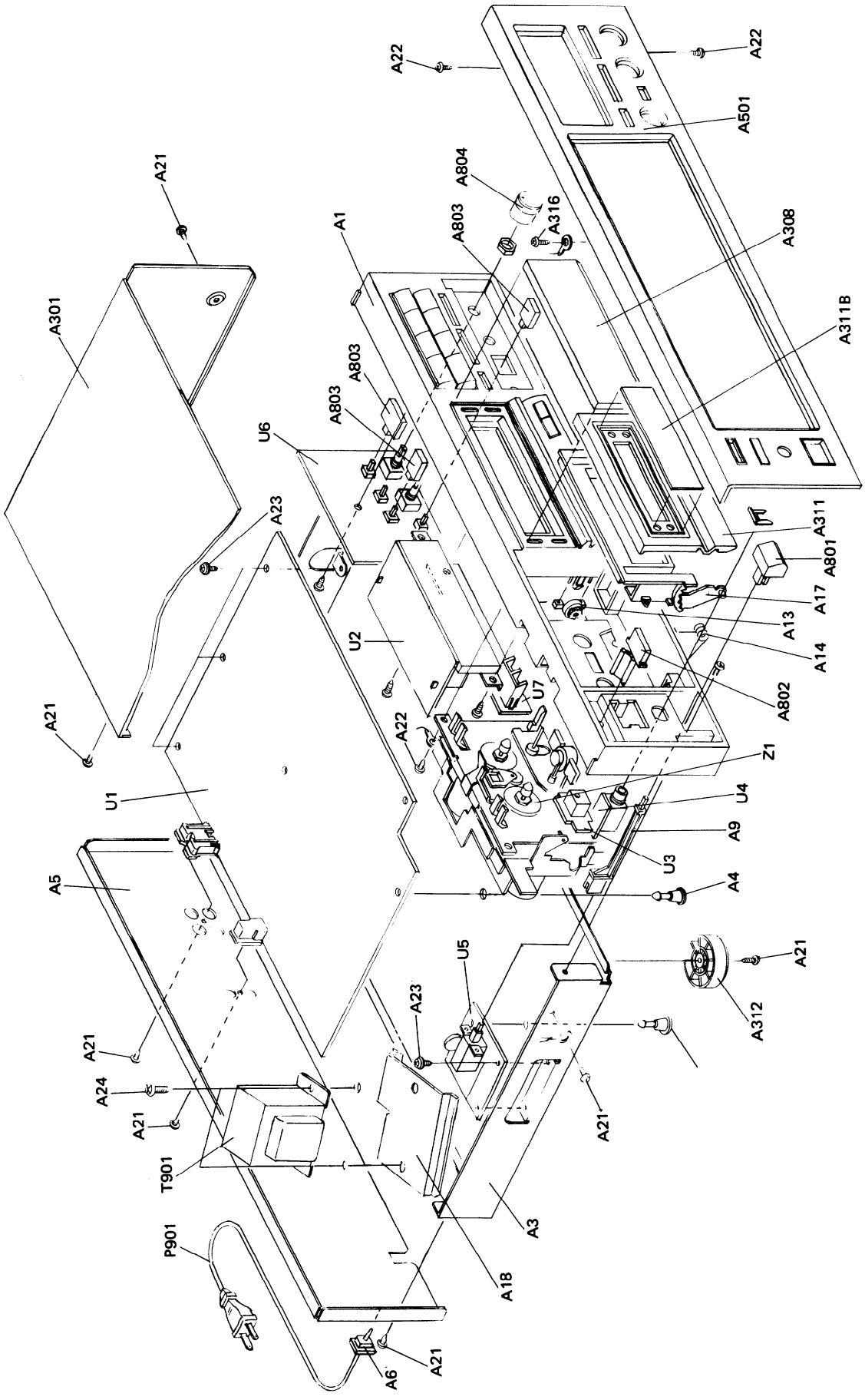
CHASSIS-EXPLODED VIEW PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
A1	27110484	FRONT BRACKET AS
A3	27100184	CHASSIS
A4	27190266	HOLDER
A5	27121248	BACK PANEL (D)
	27121249	BACK PANEL (G)
	27121251	BACK PANEL (W)
	27121276	BACK PANEL (QA/QB)
A6	27300750	BUSHING (CORD)
A9	27273069A	JOINT (POW)
A13	28400282	DAMPER
A14	27180315	SPRING (T2)
A17	28400473	FRAME AS (CASSETTE)
A17b	27180272	SPRING (CA)
A18	27130585	BRACKET (PT)
A20	27270142	SPACER
A21	834430088	TAP-TIGHT SCREW 3TTS + 8B(BC)
A22	833430080	TAP-TIGHT SCREW 3TTP + 8P(BC)
A23	831130088	TAP-TIGHT SCREW 3TTW + 8B
A24	830440089	TAP-TIGHT SCREW 4TTC + 8C(BC)
A301	28184443Z	TOP COVER
A308	28191509A	CLEAR PLATE
A311	28400476A	CASSETTE LID AS
A311A	28400477	CASSETTE LID
A311B	28400468	WINDOW
A312	27175152	LEG AS
A316	834230108	TAP-TIGHT SCREW 3TTS + 10B(Ni)
A501	1N061121UD	FRONT PANEL (D)
	1N061121UG	FRONT PANEL (G/W)
A801	28323241-1	KNOB (POW)
A802	28323686A	KNOB AS (EJ)
A803	28323684	KNOB (PUSH)
A804	28323310	KNOB (TONE)
P901	⚠ 253099C	AC CORD, AS-UC-3 (D)
	⚠ 253149	AC CORD, AS-CEE (G/W)
	⚠ 253118	AC CORD, AS-SAA (QA)
	⚠ 253104	AC CORD, C2.5BS2 (QB)
T901	⚠ 2300424A	NPT-1032D (D)
	⚠ 2300425A	NPT 1032G (G)
	⚠ 2300426A	NPT-1032DG (W)
	⚠ 2300427	NPT-1032Q (QA/QB)
S902	⚠ 25065123	NSS-1258P (W)
U1	1N061534-1	NAAR-3534-1 (D)
	1N061534-1A	NAAR-3534-1A (G/W/QA/QB)
U2	1N061535-1	NADIS-3535-1
U3	1N061537-1	NADIS-3537-1
U4	1N061538-1	NAETC-3538-1
U5	1N061539-1	NASW-3539-1
U6	1N061540-1	NASW-3540-1
U7	1N061541-1	NASW-3541-1
Z1	244124	CASSETTE DECK MACHANISM, NDM-116

NOTE (D) : Only 120V model
(G) : Only 220V model
(W) : Only Worldwide model
(Q) : Only 240V model
(QB) : Only U.K. model

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

CHASSIS-EXPLODED VIEW



TAPE MECHANISM PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
2	24611391	MECHANISM CHASSIS
2-1	24602482	IDLER AS
2-2	24601245	REEL MOTOR
2-3	24611382	BASE AS (CHASSIS)
2-4	24602483	BASE AS (REEL)
2-5	24602484	BASE AS (REEL)
2-6	24606333	SOLENOID COIL AS
2-7	82112606	PAN-HEAD SCREW 2.6P + 6F
2-8	24611177	PLASTIC WASHER 1.7 × 3.22 × .25
2-9	24606331	PLANGER
2-11	24611175	PLASTIC WASHER 2.1 × 7 × .25
2-12	24606332	CORE
3-3	24611392	HEAD BASE
3-4	24611393	SPACER (HEAD)
3-5	801291A	LOCK SCREW
3-8	24605711	SPRING
3-9	24600067	R/P HEAD
3-10	24600032	E HEAD
3-11	24606339	WIRE CONNECTOR (R/P)
3-12	24606340	WIRE CONNECTOR (E)
4	24601250	MOTOR AS
5	24606341	P.C.B. AS (CONTROL)
5-1	24606342	P.C.B.
5-13	24606343	PHOTO REFLECTOR
5-17	24606271	PUSH SWITCH
7	24607102	ARM (EJECT) L
8	24605715	SPRING
12	24607101	ARM (PLAY)
14	24602485	CAM GEAR (3R)
15	24603365	LEVER (REC)
16	24603366	LEVER (PACK) L
17	24603367	LEVER (METAL) L
18	24602489	MAIN BELT
20	24611041	PLASTIC WASHER 2.6 × 0.25
23	24610841	PLASTIC WASHER 2.6 × 4.7 × .5
25	24605714	SPRING
26	24605716	SPRING
29	24602487	FLYWHEEL AS
31	24602414B	PINCH ROLLER AS
36	24609001	PAN HEAD SCREW SW 2.6 × 5ZN
37	24609006	SCREW
39	8930151	E WASHER 1.5S
61	24611388	HOLD PLATE AS
62	833126049	TAP-TIGHT SCREW 2.6TTP + 4C
63	24611188A	WASHER (OIL SEAL)

PC BOARD PARTS LIST

NAAR-3534-1

CIRCUIT NO.	PART NO.	DESCRIPTION
	Ics	
Q101	222078	NHIC-3205
Q103	222999	CX-20187
Q301	22240247 or	BA15218N or
	222652	M5218L
Q401	22240111 or	BA15218 or
	222808	M5218P
Q405	22240240	IR2C30
Q407	222959	μPC1297CA
Q418	222465 or	BA4558
	222921	NJM-4558D or
Q501	222940	BA335H
Q601	22240147	μPC1330HA
Q607	22240247 or	BA15218N or
	222652	M5218L
Q701	22240245	HD614048SJ49
Q708	22240239	TA-7291S
Q713	22240156	LC6527H-3659
Q716	22240248	LC4969
Q901	222780125 or	78M12 or
Q902	222790122	79M12
Q906	222780055 or	78M05HF or
	222780052	78M05
	Transistors	
Q105,Q106	2211255,	2SC1815-GR,
	2211183 or	2SC1740R or
	2212485	JC501Q
Q403,Q404	2211255,	2SC1815-GR,
	2211183 or	2SC1740R or
	2212485	JC501Q
Q409	221281	DTC114YS
Q410,Q411	2211455	2SA1015-GR
Q412	2201540	2SD947
Q413	221281	DTC114YS
Q414,Q415	2211544	2SC1959-Y
Q416,Q417	221281	DTC114YS
Q602	221281	DTC114YS
Q603,Q604	2212794 or	2SD1468-R or
	2212795	2SD1468-S
Q605	2211455 or	2SA1015-GR or
	2212495	JA101Q
Q606	221281	DTC114YS
Q702	2213090	DTA114YS
Q703	2211455,	2SA1015-GR,
	2213074 or	2SA933 or
	2212495	JA101Q
Q704	2213090	DTA114YS
Q705,Q706	2211705 or	2SD655-E or
	2211706	2SD655-F
Q707	2201540	2SD947
	2211706	2SD655F (4000~)
Q709	221281	DTC114YS
Q710	2211255	2SC1815-GR
Q712	2213090	DTA114YS
Q714,Q715	2213090	DTA114YS
Q903	2211455	2SA1015-GR
Q904	2201924 or	2SD1761-E or
	2201925	2SD1761-F
Q905	2211255	2SC1815-GR
	Diodes	
D101,D102	224450753,	MTZ7.5C,
	224150753 or	05AZ7.5EB3 or
	224650753	HZ7.5EB3
D601-D608	223163	1SS133
D701	223163	1SS133

CIRCUIT NO.	PART NO.	DESCRIPTION
D702	224450433,	MTZ4.3C,
	224150433 or	05AZ4.3Z or
	224650433	HZ4.3EB3
D703	224450752,	MTZ7.5B,
	224150752 or	05AZ7.5Y or
	224650752	HZ7.5EB2
D705,D706	223163	1SS133
D707	224450562,	MTZ5.6B,
	224150562 or	05AZ5.6Y or
	224650562	HZ5.6EB2
D708,D709	223163	1SS133
D901-D906	223894	1N4002F
D907,D908	223163	1SS133
D909	224452001,	MTZ20A,
	224152001 or	05AZ20X or
	224652001	HZ20EB1
D910	224450511,	MTZ5.1A,
	224150511 or	05AZ5.1X or
	224650511	HZ5.1EB1
D911	224451501,	MTZ15C,
	224151501 or	05AZ15X or
	224651501	HZ15EB1
	Coils	
L101,L102	233313	NMC-6048
L103,L104	233382	NMC-2069
L401,L402	231084	NCH-2132
L403,L404	233314	NCH-2097
L405,L406	231127	NCH-4183
L407	231063	NLO-2037
X701	3010149	CST6.00MGW
X702	3010150	CST4.00MGW
	Capacitors	
C103,C104	354722219	220μF6.3V,ELECT.
C105,C106	354744719	470μF16V,ELECT.
C109,C110	354742219	220μF16V,ELECT.
C111-C114	354780229	2.2μF50V,ELECT.
C115,C116	354780479	4.7μF50V,ELECT.
C123,C124	354784799	0.47μF50V,ELECT.
C125,C126	354781599	0.15μF50V,ELECT.
C129,C130	354782299	0.22μF50V,ELECT.
C139-C142	354741009	10μF16V,ELECT.
C401,C402	354742209	22μF16V,ELECT.
C403,C404	354781099	0.1μF50V,ELECT.
C405,C406	354780479	4.7μF50V,ELECT.
C419,C420	354741009	10μF16V,ELECT.
C429,C430	370133314S	330PF100V,APS
C431,C432	370131514S	150PF100V,APS
C435	354780479	4.7μF50V,ELECT.
C437	370131234S	0.012μF100V,APS
C440	3547444709	47μF16V,ELECT.
C441,C442	354721019	100μF6.3V,ELECT.
C501	354780229	2.2μF50V,ELECT.
C503	354783399	0.33μF50V,ELECT.
C504	354784799	0.47μF50V,ELECT.
C505	354741009S	10μF16V,ELECT.
C601	354780109	1μF 50V, ELECT
C602-C603	354741009	10μF16V,ELECT.
C604,C605	354780479	4.7μF50V,ELECT.
C606	354742219	220μF16V,ELECT.
C607	354780479	4.7μF50V,ELECT.
C608-C610	354722219	220μF6.3V,ELECT.
C611	354741009	10μF16V,ELECT.
C612	354742219	220μF16V,ELECT.
C701	354741009	10μF16V,ELECT.
C704	354780229	2.2μF50V,ELECT.

CIRCUIT NO.	PART NO.	DESCRIPTION
C706	354741019	100μF16V,ELECT.
C710	354784799	0.47μF50V,ELECT.
C714	352982296	0.22μF50V,NP.
C905	354752229S	2200μF25V,ELECT.
C906,C907	354781599	0.15μF50V,ELECT.
C908-C910	354780479	4.7μF50V,ELECT.
C911	3504210S	6800μF25V,ELECT.
C912	354741019	100μF16V,ELECT.
C913	354744709	47μF16V,ELECT.
C915,C916	354781599	0.15μF50V,ELECT.
	Resistors	
R107,R108	5210064	N06HR 10kBD
R401,R402	5210064	N06HR 10kBD
R436	442521014F	RS1/2WBJ 100Ω
R439,R440	5210064	N06HR 10kBD
R702	49163392410	3.9KΩ×10, 1/10W
R710	49163392405	3.9KΩ×5, 1/10W
R711	49163392404	3.9KΩ×4, 1/10W
R717	442524704F	RS1/2WBJ 47Ω
R901,R902	442522294F	RS1/2WBJ 0.22Ω
R904	442520104F	RS1/2WBJ 1Ω
R906	441724704F	RS2WBJ 47Ω
R911	442520224F	RS1/2WBJ 2.2Ω
	Plugs	
P101	25055135	NPLG-5P119
P102,P103	25055147	NPLG-3P131
P104	25055138	NPLG-8P122
P401	25055132	NPLG-2P116
P705	25055138	NPLG-8P112
P706,P707	25055133	NPLG-3P117
	Sockets	
P701	25045172	HSJ-1003-01-020
P702A	2000798	NSAS-10P754
P703A	2000649	NSAS-10P605
P704A	2000972	NSAS-6P924
	Miscellaneous	
P601	25045165	NPJ-4PDBL59,INPUT/OUTPUT TERMINAL
	82143006	3P + 6FN(BC), SCREW
	27160211-1	RAD-68B, RADIATOR
	27160211	RAD-68, RADIATOR

NAAR-3535-1

CIRCUIT NO.	PART NO.	DESCRIPTION
Q303	22240246	BA6810S
Q305,Q306	2213090	DTA114YS
Q721	212073	BG654G
	Capacitors	
C301-C304	354780479	4.7μF50V,ELECT.
C712	354741009	10μF50V,ELECT.
	Resistors	
R315	49163104410	100KΩ×10, 1/10W
R731	49163104408	100KΩ×8, 1/10W
R732	49163104407	100KΩ×7, 1/10W
R733	49163104406	100KΩ×6, 1/10W
	Miscellaneous	
P105	25055234	NPLG-3P218
	27130576	BRACKET(FL)

CIRCUIT NO.	PART NO.	DESCRIPTION

NADIS-3537-1

CIRCUIT NO.	PART NO.	DESCRIPTION
Q716	24130003	GP1U50XS

NAETC-3538-1

CIRCUIT NO.	PART NO.	DESCRIPTION
P602	25045255	YKBZ1-5009, ST JACK

NASW-3539-1

CIRCUIT NO.	PART NO.	DESCRIPTION
C901	3500065A	0.01F,AC400V,IS
S901	25035558	NPS-111-L520P,POWER SWITCH

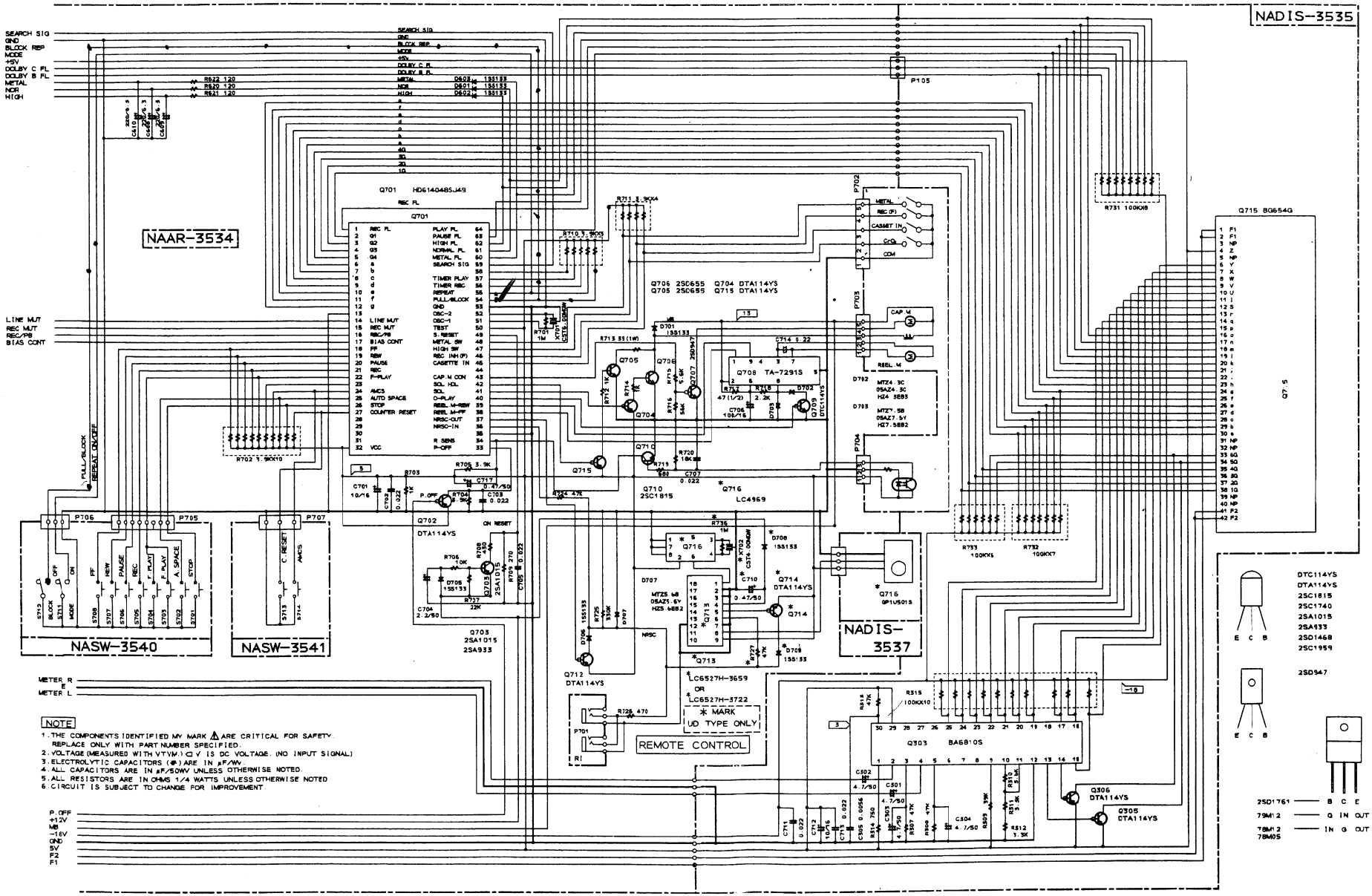
NASW-3540-1

CIRCUIT NO.	PART NO.	DESCRIPTION
R139,R140	5104249	N12RGL50KA25Z
R452	5104240	N12RGLC5KB25Z
	Switch	
S601-S602	25035514	NPS-122-L476
S701-S708	25035548	NPS-111-S510
	Socket	
P106	2000977	NSAS-12P929
P104A	2000974	NSAS-8P926
P105A	2000976	NSAS-3P928
P705A	2000973	NSAS-8P925
P706A	2000975	NSAS-3P927

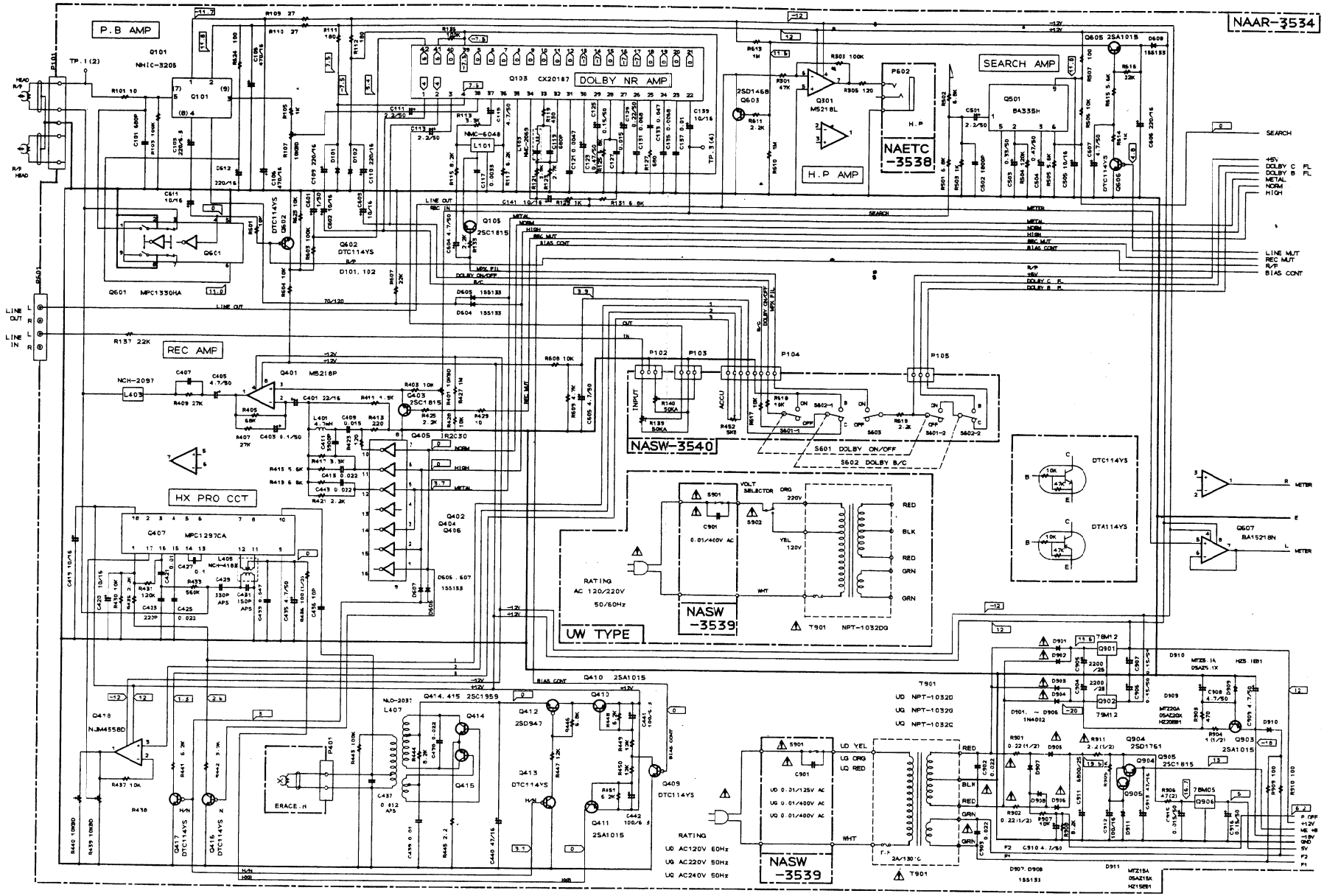
NASW-3541-1

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switch	
S713,S714	25035548	NPS-111-S510
	Socket	
P707A	2000976	NSAS-3P928

SCHEMATIC DIAGRAM (CONTROL SECTION) 2/2



SCHEMATIC DIAGRAM(AUDIO SECTION) 1/2



TAPE MECHANISM-EXPLODED VIEW